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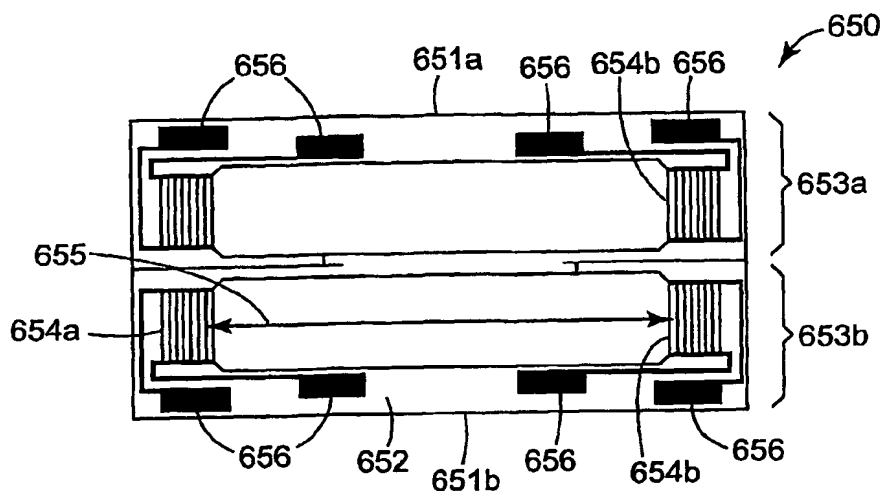
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[Continued on next page]

(54) Title: **ACOUSTO-MECHANICAL DETECTION SYSTEMS AND METHODS OF USE**



(57) Abstract: Detection systems and methods for detecting target biological analytes within sample material using acousto-mechanical energy generated by a sensor are disclosed. The acousto-mechanical energy may be provided using an acousto-mechanical sensor, e.g., a surface acoustic wave sensor such as, e.g., a shear horizontal surface acoustic wave sensor (e.g., a LSH-SAW sensor). A variety of techniques for modifying the effective mass of the target biological analytes in sample material are disclosed, including fractionating or disassembling the target biological analytes in the sample material (e.g., lysing the target biological analyte), adding a detectable mass to the target biological analyte or enhancing coupling of the target biological analyte (e.g., through the use of magnetic particles), exposing the sample material to a reagent that causes a change in at least detectable physical property in the sample material if the target biological analyte is present (e.g., a change in viscous, elastic, and/or viscoelastic properties), etc.



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